

THE VULCAN LETTER

Voice of the UAB MSTP

OCTOBER 2017

From the Director:

Robin Lorenz, MD/PhD, MSTP Program Director

I first want to say a big UAB MSTP welcome to all of the applicants we are interviewing this year. Please use your time at UAB to get to know our MSTP family and to explore how UAB and the city of Birmingham can fit in with your future training plans. We will be interviewing 48 applicants this year and our current interviewees include students from 17 different states and 28 different colleges/universities. The only schools that currently have more than one applicant in the interview pool are Duke, Emory, University of Alabama, UAB, University of Maryland, University of Pennsylvania, and Washington University in St. Louis. This year our applicants will again participate in the UAB School of Medicine Multiple Mini-Interview (MMI). The MMI offers applicants a series of short scenarios at 7-10

stations. There are no right or wrong answers, but instead the MMI gives insight into critical thinking, communication, and decision making skills. In addition to these MMI's, MSTP applicants will also do a short research presentation to the MSTP Advisory Committee and have traditional interviews with MSTP Advisory Committee members. Please use these opportunities to show us your passion for research and your drive to become a physician-scientist.

This has been a fantastic year for physician scientists at UAB, as UAB continues to be one of the only medical schools in the nation with a Physician Scientist Development Office (<https://www.uab.edu/medicine/physci/>). This office supports and enhances the training of UAB Clinician

continued on pg 3

MSTP Retreat: No Regrets

Joe Ladowski, GS-4

The theme of the 2017 UAB MSTP retreat was "No Regrets" and the schedule of events perfectly matched that objective. Held at the beautiful Marriott Grand Hotel and Resort in Point Clear, AL, the weekend provided an opportunity to explore the entire resort compound – a space which included a pier with available fishing poles and bait, two private pools, two golf courses, ten tennis courts, and of course, private beaches. The weekend began Friday evening with a cocktail hour and, guided by the omniscient "sorting" stethoscope, the induction of the new students (Christine Carico, Seth Fortmann, Melissa Jennings, Alana Jones, Bryan Mott, Michael Patton, Taylor Person, Rob Rosencrans and Lamario Williams) into their respective MSTP families. Saturday morning Dr. Lorenz delivered a State of the MSTP Address followed by student presentations on topics ranging from CD4 differentiation to the history of xenotransplantation. The group then separated by



class to focus on relevant specifics related to life and survival in the MS1/2, GS1/2,

and G3+/MS3/4 stages. Dr. A. David Redish gave the keynote presentation during lunch on his research investigating (fittingly) regret in mice. A computer scientist by trade, Dr. Redish is a researcher from the Department of Neuroscience at the University of Minnesota who studies dynamic brain processes and networks, the interaction between learning centers, and computational models of addiction and mental disorders. The author of 3 books and dozens of publications, Dr. Redish was available for the weekend to sign copies of his book and discuss his

continued on pg 9

A Week in the Life of an MS-1

Emily Hayward, MS-2

Before starting my journey at UAB last year, I didn't really know much about what to expect. I figured there would be lots of studying ahead, but I didn't know exactly what medical students do each week. I wondered how much time students spent in class, what types of classes there were, etc.

To help future generations be much more knowledgeable than I was, I'd love to look back upon my MS1 year and share a bit about what my life looked like in a typical week. Some of these experiences will be specific to UAB, but others can be broadened to medical school as a whole:

Lecture Schedule and Structure

Of course, as a medical student, lectures will take up most of your time. In your first year at UAB, you'll typically see four lectures in one day. These will be your standard 50 minute classes, and they'll almost always run from 8-noon with 10 minute breaks in between. However, it is important to note that lectures at UAB are not mandatory. This means that rather than go to class, students can choose to watch the lectures online. Each lecture will be posted a few hours after it occurs, and they are somewhat like vodcasts (like a podcast but with video). You'll hear everything the lecturers said, and the screen will display their PowerPoint slides as well as anything at which they pointed with the computer mouse. And, as a favorite feature of many students, you can speed up lectures (up to 2x!) or pause them as needed.

Additionally, I remember being confused about what exactly "classes" meant. In college, I had to sign up each semester for certain courses like "Biochemistry" or "Microbiology." Medical school, however, doesn't quite work the same way. At UAB, we have modules based upon organ systems. This means that for about 1 month at a time, we will cover an entire system of the body – cardiovascular, pulmonary, renal, etc. We'll discuss how the system should work, as well as what goes wrong in various disease states. Everyone in your class year will have the exact same lecture schedule, and each lecture will cover a different component of the organ system you are working on (so all of your basic science concepts are discussed as relevant for that organ system). At UAB, your schedule will be posted on our online system, MEDMap, typically 1-3 weeks in advance. Rather than taking specific classes that run on the same day/time throughout the semester, each week will look a little different in terms of lectures and additional activities listed next:

Add-Ons to Classes

In addition to optional classes, there are a few other mandatory activities for which you are responsible. These generally fall into one of the following categories:

1. Clinical Skills Course

Alongside our typical lecture classes, we also take a course called Introduction to Clinical Medicine (ICM). This class runs once per week and occurs in very small groups of only six people. You'll do pretty much everything with your ICM group: attend all of the same small group sessions (see #2), be in the same Learning Community, etc. You will meet each week with either two fourth-year medical student teachers, or with a physician who is your assigned preceptor. In these sessions, you will learn physical exam techniques to accompany the organ module you are studying in class, and you will practice the relevant histories and examinations on patients at the hospital.

2. Small Groups

These are a pretty common occurrence. For each organ module as described above, we will typically have about 2-3 small group sessions. These range from case studies of real patient stories and our thoughts on tests/diagnoses to crash-courses on radiologic imaging. These occur in much smaller sized groups; our MS1 class is about 180 students, and these groups tend to be 12 students each (two ICM groups put together).

3. Labs

There will be a few different labs for each organ module, which could include histology, microbiology, anatomy, and/or pathology. Each lab tends to run about 2 hours, and one lab will probably occur every 1-2 weeks. You'll often be broken into somewhat smaller groups, ranging anywhere from about 15 to 25 students, with the exception of anatomy lab where everyone participates at once (but still with only one anatomical donor per ICM group, so you can work within your small group at your own pace).

4. Interest Groups / Organizations (not mandatory, but common, and free lunch)

Finally, throughout each week, you'll tend to have a few other meetings and activities on your calendar. One of the more popular activities would be interest groups. These are student-run organizations that center around a certain specialty (oncology, OB/GYN, geriatrics, etc). They are completely open for anyone to attend, and they are typically lunch meetings... with free food involved (yay!). A physician will come and speak about his or her work or research and

A Week in the Life of an MS-1

Final Thoughts

Overall, I've found the medical school schedule a lot more manageable than I expected, and I think UAB's structure has a lot to do with that. There is certainly a ton of material in medical school, but there's also the privilege of scheduling things to your own beat at UAB (so long as it's done by the deadline!). If I'm not feeling super well and need to take a day off, I can. If I want to sleep in or take a nap in the middle of the day (because I'm 99% sure I could become a professional napper if that were a real career), I can.

If you are currently in the process of applying to medical schools, I'll add that the flexibility of having non-mandatory classes (or at least flexible attendance policies in some form) may be important to explore. My top schools ended up all having non-mandatory attendance anyway, but I have since found that self-studying is incredibly liberating for me and can barely imagine actually having to go to class all of the time. With non-mandatory systems, those who still want to go to class to avoid falling behind certainly still can, but it is not forced upon you. It's a win-win for everyone.

Ultimately, your schedule will end up revolving around your personal learning style, but I hope this has helped demonstrate the general life of an elusive MS-1! To learn more about life in different stages of the program, please visit our student-run blog: <https://unabridgedmstp.wordpress.com/>

you can learn more about the field! The American Physician Scientist Association (APSA) holds similar meetings with physicians involved in research, as well as career development talks and socials.

So what does it all look like?

For me, there's some method to the madness. Again, classes will run from about 8am-noon, but since they are not mandatory, I tend to study on my own instead. I'll typically go to one of my favorite coffee shops in the afternoon and listen to the lectures from earlier that day. The next morning, I'll review my notes at home before heading back to the coffee shop (yes, I pretty much live there, and yes, I have met the spouses of most of the baristas at this point) to listen to that day's lectures once they're posted.

Throughout the week, there will probably be 2-3 days when I have an additional activity in the afternoon for anywhere from 1-2 hours, so I'll plan my studying around that. On the other days, my afternoons are totally free. I might choose to study all afternoon (yay), but I also do have a bit of a life! One of my favorite hobbies/activities outside of school is volunteering. I volunteer with Make-a-Wish Alabama and in our student-run free clinic, so I frequently clear out time to fulfill those commitments. Again, the good news is that if I'm feeling tired after all of this, I can also just skip on a day's lectures and catch up later without worrying too much. For me, it has generally been less stressful than undergrad since it is so self-paced!

From the Director (cont.)

Scientists as they develop their careers as future leaders of academic medicine. In addition to providing direction for programs that develop future physician scientists (K-12, undergraduate, MD summer research programs, and MD-PhD programs) a new comprehensive UAB Physician Scientist Training Program is being instituted to provide career development seminars and workshops for any research-focused MD, DMD, MD-PhD, or DMD-PhD resident, fellow, or junior faculty in all clinical departments of the SOM or the School of Dentistry. The office will help trainees to develop their research portfolios, establish mentoring teams, obtain independent external grant funding, and develop into future leaders of our academic medical centers and will synergize with the available seminars offered by the UAB CCTS. The office will

also help with both the Southeastern Medical Scientist Symposium (SEMSS) at Emory University on November 18-19, 2017 and the 2018 Symposium for Advocates for Women in Science & Medicine which will be in Birmingham on April 13-14, 2018.

I also want to say thanks to all of our student committees and student representatives. This is a fantastic way to develop your leadership skills and to become involved in the UAB MSTP. We have started a new "Volunteer Spotlight" to recognize the hard work of our students on behalf of our program. See our first spotlight on our Facebook page - <https://www.facebook.com/uabmstp/> - and watch for many more to come. Your efforts help to make our MSTP a fantastic program and I am looking forward to our next year together.

Southeastern Medical Scientist Symposium

Shreya Kashyap, MS-2

Science is by definition an amalgamation of ideas, observations and experiments to better understand the world around us. In today's swift pace of biomedical advancements and innovation, it is impossible to make it in this field alone. Conferences and meetings are more than just a line to add to your resume—they are opportunities to meet people, receive feedback and advice, and make long lasting friendships. If you're looking for a conference near you, look no further! The Dale J. Benos Medical Student Research Day (MSRD) and the Southeastern Medical Scientist Symposium (SEMSS) are two upcoming conferences to add your calendar, if you haven't already.

Dr. Dale J. Benos (1950-2010) served as Chairman of the Department of Physiology and Biophysics and was a cherished educator during his time at UAB. His research interests were in epithelial sodium transport, cystic fibrosis and cognitive issues associated with AIDS. Dr. Benos was a strong proponent of medical students doing research and having a place to present their work. The meeting, named in his honor, is run by the UAB Physician Scientist Development Office (PSDO) and will be in the Hill Center on November 13th, 2017.

GS2 Corey Duke's poster, Experience Dependent Epigenomic Reorganization, won second place in his category at last year's MSRD. However, the experience itself (pun unintended) was equally rewarding, says Corey. "I had such a great summer that year, and really began to see myself as a scientist. After my first poster presentation [MSRD 2015], I realized that this was something that I needed to dedicate years to—it's exciting."

It's tempting to leave to your poster design and presentation to the last minute, but Corey advises against it. "It's on you to justify your story—it's unfair to yourself and the research if you don't invest enough time and thought into presenting the hard work that you've done in the best way possible." he says. "If you spent months to years working on a project, it's not fair to yourself to spend only a few minutes distilling it onto a poster."

While a poster is largely supplementary in your ability to convey your research, good poster design can be your saving grace at a very large conference. And while having a lot of people surrounding you and your poster may seem daunting, it can be fertile ground for establishing connections and building collaborations. "Do your best for everyone who comes to your poster, student or faculty or otherwise...you never know who you're presenting

to," says Corey.

"Relax and have fun; anyone who stops by is genuinely interested to talk to you about your project," says GS3 Muhan Hu, who is also the head of the SEMSS Planning Committee this year. SEMSS was founded in 2010 when a group of MD/PhD students from UAB, Vanderbilt and Emory came together to create an environment for budding physician scientists in various phases of their training. Entirely run by students, SEMSS centers on fostering a supportive, interdisciplinary community to guide individuals through this constantly changing field. SEMSS is a two-day event, and will be held this year at Emory University from November 18th-19th, boasting an impressive agenda. Besides a keynote address by Dr. Craig Blackstone, director of the National Institutes of Neurological Disorders and Stroke, the agenda also has multiple "Life as an MD/PhD Student" panels, poster sessions and oral presentations.

"Definitely attend all of the sessions, especially the networking ones," says Muhan. "Don't be afraid to go out of your comfort zone and get to know the students, residents, and faculty from the other schools."

Hosting SEMSS is not an easy task. "SEMSS 2016 was my first time leading the SEMSS planning committee, and I learned so much; not only about organizing a meeting, but also how to be a good leader (which I definitely am still working to improve on)," says Muhan. "Some of the key things this experience taught me was time management (this was really the most important...setting deadlines and making sure everyone keeps to the deadline), learning how to delegate the work, listening to others' ideas, and always being ready for a plan B. I think all of these skills are important in a career as a physician scientist where you're balancing many roles."

Moreover, Muhan noted that since her first SEMSS (2013), attendance has increased dramatically. "In the past we've used the conference space in Children's Hospital. I remember the attendees were mostly MSTP students from the three organizing schools, UAB, Emory, and Vanderbilt."

This year things are a little different. "We're getting more participation (we actually had to cap registration this year and turn down some abstracts), flying in renowned keynote speakers from around the country, and turning this conference into a better platform for people to network and focus on career development."

If you are presenting at SEMSS or MSRD, realize that you have an incredible opportunity and responsibility. “If you want to be a leader, you have learn how to introduce ideas that people haven’t embraced before,” says GS3 Mark Pepin. Mark was recently awarded a UAB Comprehensive Cardiovascular Center Travel Award to give an oral presentation at the Society for Heart and Vascular Metabolism (SHVM) meeting in Germany. With the oral presentation still fresh in his memory, he had a lot of advice for students selected to present at SEMSS and MSRD.

“Be cognizant of the size and nature of your audience,” says Mark. “At SHVM, I had such a specialized audience. There, I was talking about epigenetic influences on cardiac metabolism with Dr. Heinrich Taegtmeyer, the founder of cardiac metabolism, as my audience!” he recalled. “It’s kind of intimidating to summarize someone else’s work when they are literally sitting in front of you.” Moreover, in light of the growing attendance at conferences like SEMSS and MSRD, it’s important to give credit where it is due: “You should always cite your figures, especially because the people who made those figures might just be sitting in your audience. Even if it’s a schematic, or animation or something—give the person credit.”

Create a conversation; your presentation should be a dynamic, interactive experience. “One of the hardest parts is the disappointment of when you don’t get asked any questions—because then you’re like was anyone listening to me?” Mark says. “In that case, have questions prepared for your audience. This creates a dialogue between you and your listeners. When an audience member comes up to answer your question, they may have additional

questions for you.”

Additionally, when you are asked questions that you do not have an answer for, be honest. “One of the worst things you can do is pretend you know everything.”

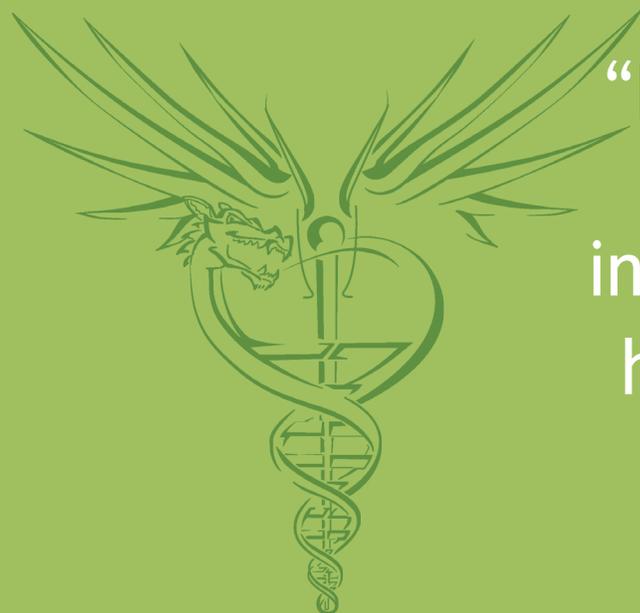
Most importantly though, “have a story,” says Mark. “I have had a hard time making things into stories. Even if it’s not chronological it should make sense. So start off with a good background, to introduce the missing part of the story, and go from there.” Corey also reiterated the importance of storytelling in science, for both oral and poster presentations. “If you’re not good at telling your story, it’s going to be hard to make it as a scientist.” He recalls knocking dejectedly on the door of his mentor, Dr. Jeremy Day, because of data that seemed insignificant or useless. “But then he’d surprise us! He would take all of this data that we thought was ‘bad’ and weave it into a story that made sense.” Being able to connect the dots, and capture the audience’s attentions and imaginations is essential to being successful.

“What’s weird is that the title of your presentation is the conclusion of your study,” Mark says. “I usually start off by saying something like, this is the conclusion of what is a very interesting study, and now I’m going to show you how we got here.”

It’s a journey—a student’s presentation, and his or her path through a physician scientist program. And thankfully, it’s far from a journey of solitude.

For more information about MSRD, please visit: <https://www.uab.edu/medicine/physci/medical-student-research-day>

For more information about SEMSS, please visit: <http://www.southeasternmdphd.org/>



“If you want to be a leader, you have to learn how to introduce ideas that people haven’t embraced before.”

-Mark Pepin

The Faux Foodie: Birmingham Bests

Emily Hayward, MS-2

*Price ranges according to Yelp!

*All distances calculated from Volker (medical school building at UAB)

*Opinions are that of only one person... but one person who really, really loves food.

Thai

Winners Surin West & Masaman Thai Kitchen

Surin West

♦**Location:**

Five Points South (walking distance from campus, or ~2 min drive)

♦**Price:** \$\$

♦**Best Dish:**

A major fan favorite is the chicken noodle bowl (pictured), which is only served during lunch. Get it with their Thai tea – if you like sweet drinks, this one is addictive and by far the best in town!

♦**Overall:** The food is great, but the location and the atmosphere are even better. If you have even a 1.5 hour break in between lectures, grab a few friends and check this place out for an amazing lunch!



Masaman Thai Kitchen

♦**Location:** Vestavia Hills (13 min from campus)

♦**Price:** \$

♦**Best Dish:** Their most popular dishes are the Pad Thai and the Chicken Masaman, and for very good reason... so scrumptious.

♦**Overall:** The food is some of the best and most authentic around, edging out Surin West in that regard. It's mainly a to-go only venue with limited seating inside so it is a "hidden" gem, but if you are looking for some of the best take-out ever, this is your place!



Mexican

Winner El Barrio

♦**Location:** Downtown Birmingham, north of campus (8 min drive)

♦**Price:** \$\$

♦**Best Dish:** Carnitas – three tacos full of citrus braised pork, onions, and tomatillo sauce. Or try the veggie quesadilla – spinach, mushrooms, charred

corn, goat cheese, and roasted garlic-tomato salsa. So good!

♦**Overall:** The fanciest, best Mexican food I've ever eaten. All ingredients are perfectly fresh and high-quality. Combinations are unique and flavors are out of this world. You have to experience it at least once!!

Pizza

Winner Basil

♦**Location:**

Crestline area (14 min from campus)

♦**Price:** \$\$

♦**Best Dish:** "The Italian" pizza – marinara sauce, provolone-mozzarella, fresh buffalo mozzarella, sliced Italian sausage, and fresh basil.

♦**Overall:** It's a little out of the way and often overlooked for popular Birmingham favorites like Slice (so my classmates will probably argue with me on this one... sorry!). For me, the pizzas just taste so fresh and the dough is always perfectly done. You can get a pretty nice personal size, so it's a great bargain and the best pizza I've had in a long time.



Brunch

Winner Trattoria Centrale

♦**Location:** Just north of campus, towards downtown (7 min from campus)

♦**Price:** \$\$

♦**Best Dish:** Fried farm eggs with seared steak, salsa verde, and creamy polenta... dreamy.

♦**Overall:** This is an Italian restaurant, and the Italian food is out-of-this-world good. But this restaurant makes the list for its picture-perfect brunch options. Lines are usually out the door because everything is amazing!



Chinese

Winner Red Pearl

♦**Location:** Homewood (8 min from campus)

♦**Price:** \$

♦**Best Dish:** Anything/everything is good, but the

Faux Foodie



sesame chicken is my favorite from anywhere in the city. Get the double

spicy chicken (pictured) if you like something with a kick!

- ◊ **Overall:** This slightly hidden restaurant is connected to a small Asian market. There are many incredibly authentic dishes. This is almost an automatic answer when students are asked about their favorite Chinese place in Birmingham!

Italian

Winner Guiseppes Cafe

- ◊ **Location:** At the very southwest corner of campus (2 min drive)

◊ **Price:** \$\$

- ◊ **Best Dish:** Chicken cacciatore – chicken, onions, green peppers, and penne pasta in marinara sauce.

- ◊ **Overall:** Total hole-in-the-wall place. Parking is super high on my list of importance, and unlike others on this list, it can sometimes be a pain here. However, try for dinner on the right day and time here, and you'll get a wonderful meal just minutes from campus.



BBQ

Winner Saw's Soul Kitchen

- ◊ **Location:** Multiple, but check out the Avondale (10 mins from campus) location if you're in the mood to hang out with friends and then grab a drink at Avondale Brewery or catch live music at Saturn/Satellite across the street.

◊ **Price:** \$\$

- ◊ **Best Dish:** Sweet tea chicken sandwich.

We are not joking – this is real (see photo for evidence), and it is



magnificent.

- ◊ **Overall:** Super great area and tasty food to go with it. Having gone to college in Memphis, it is hard to find anything that matches what the U.S. News &



World Report calls the "best BBQ city in the country," but this comes pretty close.

Fusion

Winner Wasabi Juan's

- ◊ **Location:** Both Avondale

and Hoover (10 and 15 minutes from campus, respectively)

◊ **Price:** \$\$

- ◊ **Best Dish:** 4:20 nachos... a Dorito base of chips covered in spicy tuna, avocado slices, unagi sauce, and spicy mayo. Technically an appetizer, but by far their most popular menu item (and definitely filling enough to be an entrée). A ridiculously creative combination of flavors that somehow tastes heavenly.

- ◊ **Overall:** One of the most unique places in Birmingham, Wasabi Juan's combines both Mexican and Asian foods. They are the home of the "sushi burrito," and the location in the heart of Avondale is a great place to meet up with friends.

Variety

Winner The Pizitz Food Hall

- ◊ **Location:** Downtown Birmingham (6 minutes from campus)

◊ **Price:** Varies by restaurant. On average, \$\$

- ◊ **Best Dish:** They literally have everything from chicken & waffles to authentic Ethiopian food. Yum!!

- ◊ **Overall:** Pizitz is a very recent addition to the Birmingham food scene, and the hype surrounding it was pretty unreal. This is basically one big food court with tons of individual restaurants to visit inside. There is so much variety – including a coffee shop and an ice cream place – and it is all delicious. Perfect place to take a group of friends... everyone will find something to love!



Choosing a Life, Not a Program

Alana Jones, MS-1

Having left a small town in Alabama for Washington, DC, when I was seventeen, I never thought I would return to the South, let alone Alabama, for any extended period of time. I enjoyed the summers that I'd spent in Birmingham in undergrad as part of the PARAdiGM/SIBS program, but I'd fallen in love with the East Coast. I was just a short drive away from Baltimore and Philly. I could take a \$1 MegaBus to New York City for the weekend or hop a short flight to Boston. However, when the time came to apply, I decided to branch out because of the research opportunities at programs in the Midwest and the South. Still, I predicted that I'd stay somewhere along the coast—then I started going on interviews.

I made assumptions about programs based on their names, admissions statistics, and Student Doctor Network reviews (I knew they were mostly wrong but I couldn't help myself). Most, if not all, of those assumptions were wrong. I quickly found myself eliminating schools, not because of a lack of faculty with whom I could see myself spending my PhD years, but rather because the MSTP students didn't really know each other (even those in their own cohort) or because I could not imagine putting down roots in that environment for eight years... but UAB was different. The students at UAB were not only cordial with one another, but many were close friends and even roommates. They walked each other's dogs when one was stuck in the lab over the weekend and frequently went tubing down the Cahaba River together. Many of them were neighbors, and some couples even "adopted" younger students into their own family units.

Beyond the students, no other program had a Robin Lorenz. In fact, quite a few of my other interviews involved administrators singing her praises. And no other Program Administrator came remotely close to Randy (for obvious reasons). By Second Look weekend, all I needed to do was meet my new classmates, some of whom I'd met at other interviews. And as icing on the cake, three of us met Bernie Sanders on our flight back to DC!

Every day since then reaffirms why this is the best place for me. I get the perks of living in an affordable city (#nroommate) with easy access to nature: my apartment is 10 minutes from downtown but sits between two parks and is half-hour drive from a national park. I have a gorgeous view of the city and catch the fireworks from Children's Hospital on a weekly basis, but my neighborhood is peaceful and not overrun by the sounds of sirens and cars all night. My MS1 class hasn't even been here for six months and we're already a tremendous support system for each other. We study together, go to the state fair, grocery shop, see live shows, travel, cook, and even exercise together. And that's in addition to the bonds that we're forging with the older students.

In one of my favorite quotes, W.E.B. Du Bois says, "Necessary as it is to earn a living, it is more important to earn a life...The education that trains men for earning a living is not education." That idea has informed many of my educational decisions, including choosing UAB's MSTP. I know that I would have received an equally outstanding education at those other programs, but I also know that I would not be living my best life. Here, I get to do both.

“My MS1 class hasn't even been here for 6 months and we're already a tremendous support system for each other.”
-Alana Jones



Winter is Coming

Hayden Pacl, GS-1

Fall is full of change. The oppressive heat of summer finally falters so that cooler winds may prevail, flora and fauna all prepare for the winter ahead, and students settle in for the start of their academic year. Those of us who have found an MSTP to call home beaver away year-round in some form or another; but for me, this fall marks the first of two fundamental paradigm shifts inherent to the integrated MD/PhD training model: the transition from medical school to graduate school. If the metaphor holds and it is indeed fall, then it follows that winter is coming and I, like Jon Snow, know nothing.

I have been a student my entire life. I've gone from high school to college, college to medical school, and now medical school to lab. Why might I be wary of this transition in particular? — a fair question. I have noticed during my first few months in my thesis lab, my purpose has fundamentally changed from before. During previous schooling and research experiences, I had considerable help in structuring my efforts in class and the lab from teachers, postdocs, and mentors. Now, I am getting my first taste of academic independence and responsibility. Now there might be a “right” question to ask or “best” experiment to run, but my opinion regarding what might be right or best for my project is becoming the most informed opinion. A solid support structure still exists, but mentors, committee members, and postdocs now exist as references, and are not all that different from a generic protocol to follow or a review article. I am the computer that sums their input and creates an output—the essence of an investigator.

Choosing my own areas of investigation and



lines of questioning is thrilling, to say the least! But part of the thrill derives from the real possibility, and near certainty, of failure. Indeed, the cold wind that blows breaking the heat of the heavily-prescriptive medical summer lifts my spirits while hinting at hardship on the way. Inevitable errors in my new computational role, as well as run of the mill mistakes and bad luck, can cost anywhere from minutes to months of time, hard work, and resources. I am learning the delicate balance between taking initiative and being thorough without being hasty or unproductive. It is an intimidating balancing act, but it is exactly this that I have yet to learn and now is the time to learn it. Still, I will not be left out to freeze in the cold.

While I am inherently alone as I start developing my academic independence, I know my carefully constructed support system is in place to catch obvious oversights and help me find a way forward in the dead of my winter. I take solace, too, in the promise of a spring on the other side; I am not the first student to weather this season. As I feel the brisk wind blowing this fall, I know winter is on the way, and that is something about which I can be excited.

No Regrets (cont.)

research with students.

Shortly after Dr. Redish's presentation, the group relocated to the beach volleyball courts for team building and social activities before being dismissed until dinner. Many students took this time as an opportunity to sleep, read, or relax by one of the pools. Dinner took place on the terrace overlooking the beach and was followed by a student social on the fishing pier. Sunday morning consisted of poster sessions and a journal club before the weekend

concluded with a panel of physician scientists from the University of South Alabama. In all, the weekend managed to contain a perfect balance of work, leisure, and comradery. Special gratitude for the event needs to be given to the MSTP Events Committee and Randy Seay (Program Administrator) for their tireless efforts in organizing the weekend – the retreat was such that all the participants left with #noregrets.

Student Sketch: Mika Guzman Karlsson, MS-4

Paige Souder, GS-2

MS-4, Mika Guzman Karlsson, is a world-traveling neuroscientist born in Sweden. He moved with his family to Bolivia soon after he was born to be with his dad's family. He lived in Bolivia until he was 13 where his dad worked for the US embassy. To ensure Mika got a good education and to take advantage of the opportunities provided in the US, they moved to the Los Angeles suburbs. Mika then attended high school in LA, went to UCLA for college, and worked for a couple of years as a lab technician before ending up in the UAB MSTP. Read on for highlights from our interview:

Paige: You have a unique background story. What was it like growing up in Bolivia?

Mika: I cherish my childhood in Bolivia. Although Bolivia is troubled by the same factors that afflict other developing countries, it is the loving people, vibrant culture, and breathtaking landscape that has left a lasting impression on me.

Paige: Continuing that thought, how was the transition to the US?

Mika: It was certainly a difficult transition moving to a new environment for high school, let alone in a completely different country! Fortunately, because my father worked at the US embassy, I was able to attend an American school, so I had some exposure to American culture. I also spoke English and Spanish, so there thankfully wasn't a language barrier.

Paige: What about your transition from LA to Birmingham?

Mika: Definitely easier than the transition from Bolivia to LA! Honestly, I've been pleasantly surprised how much I've liked Birmingham. Even though California is a mixture of cultures and lifestyles, I was excited about experiencing southern culture with its unique customs, cuisine, and food. I really enjoy the slower pace of Birmingham living and the ease of getting around the city, but I do miss the diversity in people and landscape that Southern California offered.

Paige: When did you decide to apply for an MD/PhD program?

Mika: I was initially set on the MD-only track and like other pre-med students, I became involved in research to fulfill an application requirement. However, once in the lab I surprised myself by how much I enjoyed it. Going to my first big scientific conference towards the end of college is what



sealed the deal for me. I saw science as a process so much larger than the individual experiments I was running in lab. It was no longer a practice performed in isolation but instead a vibrant and engaging community with a shared sense of purpose. After this experience, I became intrigued by the MD/PhD track and took a couple of years off to explore further the idea of becoming a physician-scientist.

Paige: Retrospectively, do you think taking time off was a good choice for you?

Mika: Absolutely. An MSTP is a long, challenging, competitive training program. My time off allowed me to develop additional research experience, foster healthy life balance practices and most importantly solidify my decision to pursue an MD/PhD. I think my parents were afraid that I wouldn't want to go back to school but taking time off to actively think about what was important to me and what my options were positioned me to be in a better place. I think we all have to do this at some point. Otherwise you run the risk of being at the end of the path and finding yourself in something that might not be exactly right for you. It's a lot easier to achieve something when you know your end goal and the best way to accomplish it. The more foresight and insight you have, the better off you are. I also figured out during this time what people I needed to talk to, (broadly) what I wanted to study for my PhD, and as a result I was more motivated to push forward. During my time off I realized I wanted to build on my experience with behavioral neuroscience, incorporating molecular biology and biochemical approaches to study the processes underlying

Student Sketch

learning and memory.

Paige: That's great advice for anyone considering applying for one of these programs. What made you choose UAB?

Mika: The program's stewardship and students were, and continue to be, fantastic, so it was a no-brainer. Plus Birmingham is a very comfortable city in which to live. There is an active neuroscience community with diverse research programs, allowing me to readily identify PIs [principal investigators] to work with, including Dave Sweatt who ended up being my thesis mentor. Interestingly, joining Dave's lab is another example of how my time off prepared me to take advantage of serendipitous opportunities. During that time I had read Dave's *Mechanisms of Memory* textbook and familiarized myself with his research. When I interviewed at UAB, I was pleasantly surprised to find that he had, in fact, moved his lab to UAB from Baylor.

Paige: What was your thesis project?

Mika: I used next-generation sequencing and bioinformatics to characterize transcriptional and DNA methylation changes in a mouse model of Alzheimer's disease. By integrating our results with data from other transgenic mouse models, we identified a conserved profile of dysregulated pathways including extracellular matrix remodeling, immune function, neuronal plasticity and chromatin binding. Our analysis also revealed that each model had overlapping but distinct patterns of dysregulation suggesting that certain models may be depicting unique parts or phases of the overall disease pathogenesis. Building from our results, we also showed that ASO (antisense oligonucleotide)-based therapeutics targeting epigenetic enzymes could rescue AD-related cognitive impairment.

Paige: Did you think getting that experience in bioinformatics will be useful for you as you progress in your career?

Mika: Definitely. I think it's a useful skill to have and there is an increasing demand across several disciplines/specialties for using genomic or other -omic approaches to answer research and clinical questions. From a scientific perspective, these tools allow us to capture a more accurate, complete picture of normal biology and pathophysiology. Clinically, these approaches help us infer new clinical associations, make novel diagnoses, redefine existing diagnostic criteria, tailor individual treatments, and track treatment effectiveness.

Paige: What was the hardest part of the PhD phase for you?

Mika: I would say gaining the skills to be able

to identify when a project is moving forward and when to change the direction of a project. Navigating that learning process requires time as well as repeated trial and error. I spent too much time trying to make things work that, for whatever reason, weren't working—whether that was the tools I was using, my understanding of the underlying physiology, the availability of necessary resources, etc. Looking back, I should have changed projects much earlier than I did. Even though the transition to a new project was challenging, I learned how to be flexible. Interestingly, some of my initial ideas and hypotheses did find their way into my final dissertation.

Paige: Speaking of transitions, how was it for you transitioning back to medical school?

Mika: I feel very fortunate to be part of a program like ours that has the built-in infrastructure like MSTP 795 and retreat workshops to facilitate the transition process. To expand on this information, I made sure to talk to other students who had transitioned before me, picking their brains for specific practical details like which faculty to work with, what services to request, what study resources to use, etc. With those two resources, I was surprised how smoothly the transition went. Looking back, I think that having a smooth transition is less about the depth of your medical knowledge and more about your practical skill set as it relates to gathering data relevant to your patient, interacting with your patient and your team, and presenting to your team on rounds. Your proficiency at these skills is evaluated on a daily basis making them much more important. In one sense MD/PhD students may be at an advantage entering the clerkships as they have spent their PhD years developing these same skills. That being said, I most definitely had to get in the habit of reading daily to relearn much of the medical information that I had forgotten from the first two years of medical school.

Paige: Now that you're in your final year of medical school, what is your plan for residency?

Mika: I'm applying for child neurology and neurodevelopmental disabilities residencies, which are 5 and 6 years, respectively. Both have 2 years of general pediatrics, 1 year of adult neurology, and then 2-3 years of child neurology/developmental disabilities.

Paige: When did you decide on that residency track and how have you been prepping for it?

Mika: Towards the end of my third year. Although I made sure to take the time to reflect on my experience with each rotation,

continued on pg 12

Faux Foodie (cont.)

“Fast” Food

Winner Wings Plus 3

♦**Location:** In between Birmingham and Homewood (7 min from campus)

♦**Price:** \$

♦**Best Dish:** CAJUN. RANCH. FRIES. Need we say more?!

♦**Overall:** The wings are pretty decently sized, and every flavor is delicious. Parking immediately by the building makes it a quick in/out that’s as easy as fast food but much yummier.

Miscellaneous Sweets/Dessert

Winner Pastry Art Bake Shoppe

♦**Location:** Homewood (8 min from campus)

♦**Price:** \$

♦**Best Dish:** Baby. Bites. These are super unique “cupcakes” that are bite-sized, with frosting all

around them and perfectly moist cake inside. The perfect cake-to-frosting ratio without the mess of a full-sized cupcake... what more could you want?

♦**Overall:** As someone who doesn’t really like cupcakes, this one is still a must-try.



BONUS: Ice Cream

Winner Mountain Brook Creamery

♦**Location:** Mountain Brook (8 min from campus)

♦**Price:** \$

♦**Best Dish:** Ice cream. All of it.

♦**Overall:** I love ice cream so much.

Student Sketch (cont.)

including what I liked or didn’t like, what I thought I did well, and where I could improve. Talking to faculty for guidance throughout the rotations, asking what they do and why was also helpful. Most faculty have an inherent desire to give people advice and, when the setting is appropriate, you can gain a lot of information from them. Starting on psych actually allowed me to rule that out early on, after which I deliberated between adult and child neurology. I found myself drawn to the world of pediatrics—a happy and lively place where I could be goofy and joke around, all while wearing a Pikachu name badge. I also enjoyed working with family members to promote the care and development of their children. Ultimately, it was my AI [acting internship] in child neurology that solidified my choice. It was the perfect combination of neurology, pediatrics, medical genetics, development, and psychiatry.

Paige: What is most exciting to you about starting residency?

Mika: Right now I feel similar to how most graduate students feel at the end of their PhD training—you have this 6 month sweet spot where you know precisely which experiments to run, you can get data and trust it, and then make the appropriate logical conclusion from that data and design a subsequent experiment. You feel on top of the world, and you have the skills and knowledge to get things done. I’m looking forward to transitioning from being a student to the actual caretaker of the patient, though. I look forward to that responsibility. It’s liberating in a sense because you’re no longer behind the protective wall of your residents or

attendings. I’m also excited to be able to focus on the patient population and the type of medicine I’m interested in doing for the rest of my career.

Paige: What are your larger career goals during/after residency?

Mika: I wish to enter a residency program that will provide a rigorous and broad-based clinical education with a diverse patient population. Given my long-term goals of remaining in academic neuroscience, I’m searching for a program that encourages individualized mentorship and facilitates research opportunities, ideally through a formal mechanism. After residency, I plan to devote my time to clinical practice, research, education, and mentorship. At the moment, I think I would enjoy the prototypical 80/20 split with 80% research, 20% clinical duties. The research component being basic science and some translational or clinical research.

Paige: And, most importantly, what do you do for fun when you’re not taking care of patients or studying neurons?

Mika: I like music—playing music, listening to music, and going to concerts. I’ve played the drums since middle school band, and I’ve gotten back into it since I moved to Birmingham. We had a band the first 2-3 years of grad school composed of myself, my friend Jarrod Meadows [UAB MSTP alumni], two medical students, and a graduate student. We played at some of the local bars and music venues. It was an excellent way to relax and do non-school related activities. Having good outlets is essential. I also like food, beer, soccer, and working out.

Dissertations

Congratulations to our new doctors!

Ryan Berry, PhD CMDB

Dan DiToro PhD Immunology

Alex Dussaq, PhD PBMM

Alex Bray, PhD Cancer Biology

Events

Jeff Singer will speak at Pathology Grand Rounds Thursday, October 26 at 8 AM in WTI 101.

MSRD 2017 is November 13.

SEMSS 2017 is November 18-19 at Emory University

Volunteer Spotlight

Graham Cochrane, GS-1

◆Events Committee

"It was a pleasure to work with Graham this past year in the Events Committee. As the chair of the recruitment subcommittee, Graham did a wonderful job interfacing with current and prospective students and helped the right students find a home at UAB. While this always entails hard work and attention to detail, it is especially impressive to recruit effectively in the midst of the demands of the MS2 year - including Step 1. I hope you'll join me in thanking Graham and all those involved with the Events Committee's recruitment efforts this past year." -Vince Laufer, Events Committee Chair 2016-2017



Shima Dowla (MS3) is awarded the UAB Excellence in Service Award



Robert Rosencrans (MS1) named the new Medical Education Committee rep



Jeremie Lever (GS3) receives F31 funding & is a semifinalist in the UAB 3-MT competition



Kristin Olson (GS3) receives 4 years of funding for her F31 application



Patrick Molina (GS1) featured in the AAMC Anatomy of an Applicant Series

"The program's stewardship and students were, and continue to be, fantastic, so choosing UAB was a no-brainer."

-Mika Guzman Karlsson



Checking out some fish eyeballs at the YMCA

Publications

- ◊ Iraci N, Gaude E, Leonardi T, Costa ASH, Cossetti C, Peruzzotti-Jametti L, **Bernstock JD**, Saini HK, Gelati M, Vescovi AL, Bastos C, Faria N, Occhipinti LG, Enright AJ, Frezza C, Pluchino S. Extracellular vesicles are independent metabolic units with asparaginase activity. *Nat Chem Biol*. 2017 Jul 3. doi: 10.1038/nchembio.2422. [Epub ahead of print]. PMID:28671681.
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- ◊ **Cohen JL, Ma E, Rogers AJ**. Nonmedical use of prescription stimulants by medical students: A call to action. *Academic Medicine*: July 2017 - Volume 92 - Issue 7 - p 901. doi: 10.1097/ACM.0000000000001753. Student and Resident Letters to the Editor: Well-Being of Learners
- ◊ **Dennis EA**, Robinson TO, Smythies LE, Smith PD. Characterization of Human Blood Monocytes and Intestinal Macrophages. *Curr Protoc Immunol*. 2017 Aug 1;118:14.3.1-14.3.14. doi: 10.1002/cpim.30. PMID: 28762485.
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- ◊ Kasztan M, **Fox BM**, Speed JS, De Miguel C, Gohar EY, Townes TM, Kutlar A, Pollock JS, Pollock DM. Long-Term Endothelin-A Receptor Antagonism Provides Robust Renal Protection in Humanized Sickle Cell Disease Mice. *J Am Soc Nephrol*. 2017 Aug;28(8):2443-2458. doi: 10.1681/ASN.2016070711. Epub 2017 Mar 27. PMID: 28348063. PMCID: PMC5533228.
- ◊ Speed JS, Hyndman KA, Roth KJ, Heimlich JB, Kasztan M, **Fox BM**, Johnston JG, Becker BK, Jin C, Gamble KL, Young ME, Pollock JS, Pollock DM. High dietary sodium causes dyssynchrony of the renal molecular clock in rats. *Am J Physiol Renal Physiol*. 2017 Sep 27;ajprenal.00028.2017. doi: 10.1152/ajprenal.00028.2017. [Epub ahead of print]. PMID: 28971988.
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